

Pediatric clinic 10 February 2011

Gastroenteritis

More common in March, April

Diarrhea: huge amount of stool more than normal bowel habits

- Mild: 50-70 ml/kg/day
- Moderate: 70-90 ml/kg/day
- Severe: >90 ml/kg/day
- Diarrhea if > 5ml/kg/motion = loose stool

Causes:

Outside GIT

- Post-nasal discharge (tonsillitis, pharyngitis, otitis media, common cold)
- URT, Pneumonia, chest infection

Insides GIT (enteral)

- Viral: rotavirus
- Bacterial: E.coli, salmonella, shigella
- Protozoal: amoebic dysentery, giardia

Criteria

- Viral: secretory diarrhea, osmotic diarrhea \pm lactose intolerance \rightarrow watery diarrhea
- Bacterial: osmosis, malabsorption, destruction of intestinal wall \rightarrow hemorrhagic diarrhea \pm mucous
- Protozoal: mal-digestion + hyperperistalsis + \uparrow secretion \pm injury to intestinal mucosa \rightarrow mucus diarrhea + tenesmus
- Fever: bacterial diarrhea, parenteral diarrhea, viral 2ry infection, protozoal (very mild diarrhea)
- Mucous: bacterial, Protozoal
- Watery diarrhea: viral, parenteral diarrhea (2ry GE)
- Blood: bacterial
- Abdominal pain: giardia
- Bone ache, poly arthritis: giardia
- Seizures: febrile convulsion, hyponatremia (if NA > 160 mmol/l)
- Hyperkalemia: renal impairment = severe GE

Investigations:

- Stool analysis: organism
- CBC

If vomiting persist more than 21 days + diarrhea + dehydration → neonatal sepsis

Neonatal sepsis (early signs)

1. Poor suckling
 2. Omphalitis (infected umbilical stump) → bad odor from umbilicus
 3. Temperature instability: hyperthermia then hypo, if preterm hypothermia
- Serum electrolytes: hyperkalemia, hypo or hyponatremia
 - Severe dehydration → kidney function tests

Treatment

Rehydration therapy

Dehydration degree	no	some	severe
Conscious level	N	Confused	Disturbed
Skin turgor	N	~2 sec	>4 sec
Sunken eyes	N	~	Severe
Thirsty	N	Eager to drink	Inability to drink
Capillary refill time	1-2	2-4	>4 sec
Pulse	N	↑	Tachycardia
Blood pressure Neonate 90/40 1 year 100/80	N	↓	Hypo
Urine output Normal 1mg/kg/day	N	↑	Oliguria
Fontanelles If less than 2 years	N	Mild depressed	Depressed
Tongue	N	Moist	Dry
Plan of TTT	A	B	C

NO DEHYDRATION: PLAN A

If vomiting = ORS + antiemetic

Over 2-4 hours

1. Antiemetic

1) Metoclopramide

Primperan (0.5 mg/kg/day or /dose)

A. Ampule: 10 mg/ml

الشرطة = 1 ميليجرام = 2 كيلوا

الوزن ÷ 2 لكل شرطة

B. Oral syrup (5mg/5ml)

WT/2 over 3 divided doses → الوزن ÷ 2 و اقسمه علي 3 جرعات في اليوم كل 8 ساعات

C. Drops: 1drop/kg/dose → نقطة / كيلوا في المرة الواحدة

D. Suppositories: emiral 10mg

Other trade names: *Meclopram*

2) Domperidone

- 1mg/kg/day
- Safe from 1st day
- Oral: Motilium, Motinorm, Gastromotil, Farcotilium

5mg/5ml → 1mg / 1 ml → 1 ml/kg →

1 سم لكل كيلو في اليوم و يقسم علي 8 ساعات قبل الرضاعة او الاكل بربع ساعة

- Suppositories: 10mg
- Can be used in GERD → prokinetic drug

2. ORS

- احل الكيس في 200 ميللي
- اجيب زجاجة الكوكالا الصغيرة 199 ميللي و احل الكيس عليها
- For every vomiting/ diarrhea → 50 cc or 20 small spoon → بعد كل ترجيع او اسهال ادي 2 ملعقة صغيرة
- Breast feeding → not stopped as it reduce diarrhea → الام تكمل رضاعة عادي
- If vomiting stop → outpatient treatment
- If vomiting resist → Plan B
- ORS trade names: *Rehydran, low hydran* (in case of hypernatremic dehydration), *hydro safe*, most palatable بطعم البرتقال

7up and cola is contraindicated → osmotic diarrhea

IV FLUIDS: Three groups

SHOCK THERAPY

- Severe dehydration → plan C
- 5-10 mg/kg
- اكرها 3 مرات فقط

- Over 15-30 min
- Every 15-30 min reassess patient
- Fluid used: normal saline NaCl 0.9%
- Or Ringer Lactate

Plasma expanders are not used in pediatric

Only to be used in shock is: plasma, blood, and albumin

DEFICIT THERAPY

- Over 6-8 hour
- Repeated for 2 times
 - Infancy من سنة الي 3 سنوات
 - Mild → 50ml/kg
 - Moderate → 100ml/kg
 - Severe → 150 ml/kg
 - Childhood اكبر من 3 سنوات
 - Mild → 30ml/kg
 - Moderate → 60ml/kg
 - Severe → 90ml/kg
- المحلول المستخدم هو باناسول
Punsol => ½ saline + ½ glucose 5%
- Only to Add K in case of DKA

MAINTENANCE THERAPY

- Over 24 hour
 - 1st 10 kg → 100 ml/kg → اول 10 كيلو
 - 2nd 10 kg → 50 ml/kg → ثاني 10 كيلو
 - 3rd 10 kg → 20 ml/kg → ثالث 10 كيلو
- Solution used: ¼ saline + ¾ glucose 5%
- + K → 1ml/100 ml solution → احط البوتاسيوم و اقسم علي 100
- In hypernatremic dehydration → solution used 1/5 normal saline + 4/5 glucose 5%
- To count drops: drop/min

$$\frac{\text{amount of fluid calculated}}{\text{number of hours} \times 3}$$

PLAN B

- Deficit therapy: mild or moderate احسب علي
 - Mild if persistent vomiting, no dehydration (plan A و حولته)
 - Moderate → some dehydration + vomiting or diarrhea
- Deficit therapy يكرر مرة او مرتان و لا يكرر اكثر من ذلك
- ORS: ياخذ كميات قليلة علشان اشوف الترجيع موجود ولا خف
- Breast feeding → يكمل رضاعة بس كميات قليلة
- + Antiemetic
- If respond well → discharge on ORS + antiemetic

PLAN C

- Severe dehydration = ICU
- Shock therapy and assessment every 15-30 minute to be repeated if needed for 3 times
- Then → deficit therapy → severe احسب علي
- If still dehydration → maintenance therapy over 24 hour to be repeated
- When improved → ORS then discharge

Outpatient treatment of cases of GE

- **Parenteral diarrhea** (tonsillitis, otitis media, URT infection): TTT of cause + ORS
Antidiarrheal drugs may be used (*Kapect, kaolin*) can be used especially *Smecta*
Remember penicillins are associated with diarrhea → البنسلينات بتعمل اسهال
Vomiting or diarrhea = ORS + continue feeding
- **Viral GE:** ORS ± *Smecta*
- **Bacterial GE:** E.coli, shigella, salmonella
 1. Sulfamethoxazole:
Contraindicated if less than 2 years → ممنوع في الاطفال اقل من سنتين
 2. Macrolides: azithromycin
Except in favism G6PDd → the two are contraindicated
 3. Amoxicillin, clavulanic acid combination
 4. Severe GE: 3rd generation cephalosporin
 - Cephoprazone (*cefazone, cefozon, cefobid*) at least for 3 days injection
 - ثم اكمل علي السلفا لمدة 7 ايام
 5. If stool analysis → salmonella + positive Vidal titer > 1/320 or 1/460
 - Drug of choice: 3rd generation cephalosporin
 - Typhoid: headache, vomiting, white coated tongue, tender abdomen, tympanitic abdomen, generalized bone ache, step ladder fever, never return to base line
 - Typhoid: drug of choice: ceftriaxone
 - *Rocephin, ceftriaxone, cefaxone*

IM with lidocain

IV with water as solvent

Once daily

- Or azithromycin 20mg/kg/day
 - » Azithromycin 100mg/5ml → 1ml = 20 mg → 1سم لكل كيلو مرة في اليوم
 - » 200 mg/5ml → WT/2
- For 10 days: ceftriaxone 3 days + azithromycin 7 days
- **Protozoal:**
 - Amoeba: metronidazole 2cm/kg/day
 - Giardia: metronidazole 1cm/kg/day
 - Encysted form: **Furazol, Dimetrol** 2cm/kg/day
 - For 10 days ± 3rd generation cephalosporin or Septazole for 2ry bacterial infection
- Shigella: bloody diarrhea, mild tenesmus, high fever

Parasitic infestation

H. nana:

- » Niclozan 1gm/day → 5 أيام اكله خفيفة لمدة 5 أيام
- » Praziquantal 5-10 mg/kg → biltricide tablets

Probiotic: lacteal forte: كيس الصبح وكيس بالليل

Prebiotic: semisolid foods → شربة خضار – لسان العصفور – بطاطس مهروسة – تفاح مهروس

Breast feeding → يكمل عادي في حالات الاسهال

Artificial milk if lactose intolerance → patient in good condition but still diarrhea, distention after feeding → lactose free milk (bebelac F.L)